I/WE CLAIM:

1. A method of lubricating an aircraft engine, comprising:

collecting a hot air/oil mixture from a main bearing cavity of the engine;

delivering the hot air/oil mixture directly into an air/oil separating system;

separating liquid oil from air contained in the air/oil mixture through the air/oil separating system;

cooling the separated liquid oil; and

transferring a first amount of the cooled liquid oil into a gearbox for lubrication while transferring a second amount of the cooled liquid oil into the main bearing cavity for lubrication.

2. A method as claimed in claim 1 wherein the air/oil separating system is disposed inside the gearbox and wherein the hot air/oil mixture collected from the main bearing cavity is substantially isolated from contacting the gearbox.

3. A method as claimed in claim 2 further comprising collecting the separated liquid oil directly from the air/oil separating system and returning the collected liquid oil to an oil supply source outside the gearbox for cooling.

4. A method as claimed in claim 3 further comprising collecting from the gearbox, the liquid oil having lubricated the gearbox, and returning same to the oil supply source.

5. A method as claimed in claim 4 further comprising directing the liquid oil collected both from the gearbox and directly from the air/oil separating system to a scavenging system prior to returning same to the oil supply source.

6. A method as claimed in claim 2 wherein the separating step is conducted under centrifugal forces within a rotating hollow shaft of the gearbox, the hollow shaft substantially incorporating the separating system therein.

7. A centrifugal air/oil separation system substantially positioned inside a rotatable hollow shaft disposed substantially horizontally the system comprising:

an annular separating chamber defined co-axially within the hollow shaft and adapted to rotate together with the hollow shaft;

a stationary annular cavity positioned at an end of the hollow shaft, communicating with a cavity of the engine disposed outside the gearbox, for collecting an air/oil mixture therefrom such that the air/oil mixture is substantially isolated from contacting components inside the gearbox;

a mixture inlet passage defined between the annular cavity and the annular separating chamber, permitting the air/oil mixture in the annular cavity to enter the annular separating chamber for centrifugal separation;

an air outlet passage defined through the annular cavity, communicating the annular separating chamber for discharging air separated from the air/oil mixture in the annular separating chamber; and

an oil outlet passage for discharging liquid oil separated from the air/oil mixture in the annular separating chamber into the annular cavity.

8. A centrifugal air/oil separation system as claimed in claim 7 wherein the annular separating chamber is sealingly mounted within and radially spaced from the hollow shaft, forming an annular passage defined between an interior of the hollow shaft and an exterior wall of the annular chamber, the annular passage being in communication with the annular separating chamber and the annular cavity, and forming a part of the oil outlet passage.

9. A centrifugal air/oil separation system as claimed in claim 8 wherein the annular separating chamber comprises a plurality of openings defined in the exterior wall thereof such that the liquid oil in the annular separating chamber under centrifugal forces

enters the annular passage through the openings during rotation of the hollow shaft.

10. A centrifugal air/oil separation system as claimed in claim 7 wherein the hollow shaft is rotatably supported at the end thereof by the stationary annular cavity, and an end portion thereof extends axially into the annular cavity.

11. A centrifugal air/oil separation system as claimed in claim 10 wherein the hollow shaft comprises a plurality of holes defined in the end portion thereof extending into the annular cavity such that the liquid oil in the annular passage under centrifugal forces enters the annular cavity during rotation of the hollow shaft.

12. A centrifugal air/oil separation system as claimed in claim 7 wherein the air outlet passage comprises a central axial passage defined within an interior wall of the annular separating chamber and a plurality of openings defined in the interior wall.

13. A centrifugal air/oil separation system as claimed in claim 12 wherein the interior wall extends axially into the annular cavity, forming at least a part of an annular interior of the annular cavity.

14. A centrifugal air/oil separation system as claimed in claim 12 wherein the openings defined in the interior

wall of the annular separating chamber are located at an end distal from the annular cavity.

15. A centrifugal air/oil separation system as claimed in claim 7 wherein the air/oil mixture inlet passage comprises a plurality of openings defined in a radial wall of the annular separating chamber adjacent to the annular cavity.

16. A centrifugal air/oil separation system as claimed in claim 7 wherein the annular separating chamber comprises a packing disposed therein and adapted to rotate together with the annular separating chamber, the packing having a substantially rigid matrix adapted to inhibit collapse under centrifugal forces during rotation thereof, the matrix defining a plurality of flow passages permeable to the liquid oil and air for both axial and radial movement of the liquid oil and air therethrough.

17. A centrifugal air/oil separation system as claimed in claim 7 wherein the annular cavity comprises an outlet defined in a lower location of the annular cavity and being adapted for connection of a scavenging system.

18. A centrifugal air/oil separation system as claimed in claim 7 wherein the annular cavity comprises an inlet defined in one of a side wall and the cylindrical wall of the annular cavity and being adapted for connection

of the cavity of the engine such that when the air/oil mixture from the cavity of the engine flows through the inlet into the annular cavity, the air/oil mixture is directed in a substantially axial direction through the annular cavity and the mixture inlet passage into the annular separating chamber.

19. A method of managing lubrication oil in an aircraft engine comprisng the steps of:

providing in parallel oil from an oil source to an engine bearing cavity lubrication system and an accessory gearbox lubrication system;

collecting spent oil from said respective systems;

separating air from at least the oil collected from the engine bearing cavity lubrication system; and

providing oil from said separating step back to said source in a manner so as to bypass accessory gearbox lubrication.